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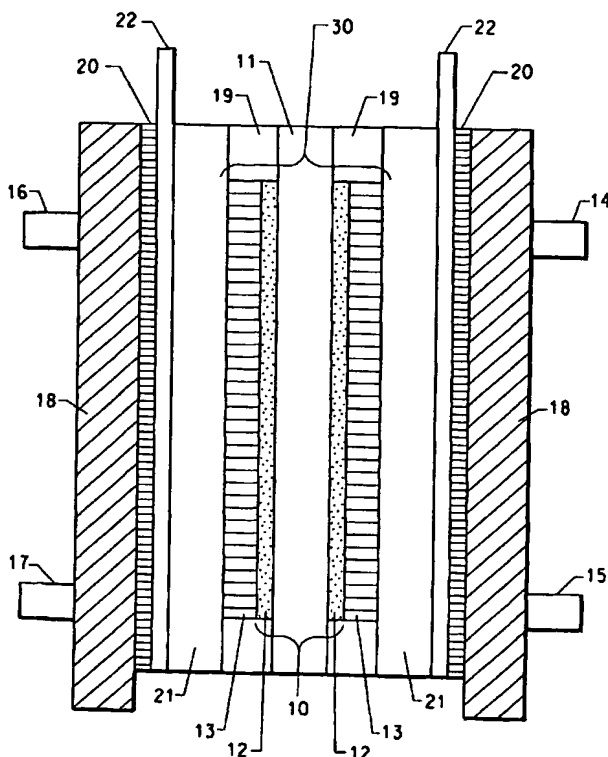
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(54) Title: **SULFONIMIDE CONTAINING COMPOUNDS AND THEIR USE IN POLYMER ELECTROLYTE MEMBRANES
FOR ELECTROCHEMICAL CELLS**



(57) Abstract: A compound having the general structure (I), wherein A_{L1} is a monovalent, divalent, or trivalent aromatic heterocyclic group comprising heterocyclic rings; R_{L1} , R_{L2} , and R_{L3} are divalent fluorinated groups; m, n, and p are 0 to 3, with the proviso that m + n + p is equal to 1, 2, or 3 so that the carbon atoms of the heterocyclic rings are fully substituted by acidic fluorinated sulfonyl-containing groups; q is 0 or 1; Y_{L1} is -OH, -NH-SO₂-R_{L4}, wherein R_{L4} is a monovalent fluorinated group, -NH-, -NH-SO₂-R_{L5}-SO₂-R_{L6}, or -NH-SO₂-R_{L6}-A_{L2}-R_{L7}-SO₂-R_{L8}, wherein A_{L2} is a divalent heterocyclic group and R_{L5} , R_{L6} , and R_{L7} are divalent fluorinated groups; and Y_{L2} and Y_{L3} are -OH or -NH-SO₂-R_{L4}; with the proviso that when m and n are each equal to 1, p is 0 to 1, and q is 0, Y_{L1} is selected from the group consisting of -NH-, -NH-SO₂-R_{L5}-SO₂-R_{L6}, and -NH-SO₂-R_{L6}-A_{L2}-R_{L7}-SO₂-R_{L8}. By compound is meant either a small molecule or a repeat unit of a polymer. The invention also provides a solid polymer electrolyte membrane, a membrane electrode assembly, a gas diffusion electrode, an electrocatalyst coating composition, and a fuel cell.

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